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(54) Title: A METHOD AND A SYSTEM OF DIAGNOSING CORROSION RISK OF A PIPE OR A PIPELINE IN SOIL
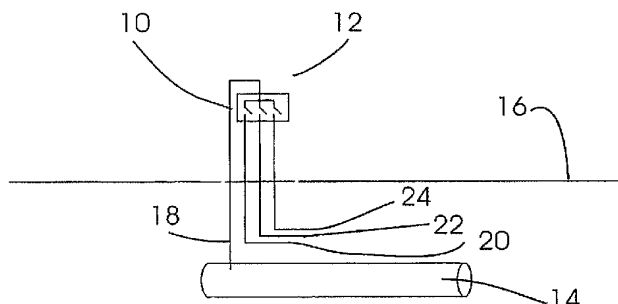
(57) Abstract: The invention relates to a method of diagnosing corrosion risk of a pipe or a pipeline buried in soil due to DC
stray currents and/or AC voltages induced in the soil. The method comprises the provision of a two-part metal probe including a
first probe part having a first metal element of a first size and a first specific resistivity, the first probe part constituting an exposed
element, and a second probe part having a second metal element of a second size and a second specific resistivity, the second probe
part being hermetically sealed and constituting a reference element, burying the two-part metal probe in the soil, measuring the AC
current flowing between the pipe or the pipeline and the two-part metal probe, measuring the AC voltage between the pipe or the
pipeline and the two-part metal probe, and measuring the spread resistance based on the AC current and the AC voltage according to
Ohm's Law. The method further comprises passing a first excitation current through the first probe part and determining the voltage
generated by the first excitation current across the first probe part for measuring the resistance of the first probe part according to
Ohm's Law, passing a second excitation current through the second probe part and determining the voltage generated by the second
excitation current across the second probe part for measuring the resistance of the second probe part according to Ohm's Law, storing
the measurements and repeating the steps periodically. Even further, the method comprises the determination of the corrosion of
the first probe part based on the measurements performed according to a mathematical corrosion algorithm, and diagnosing the risk
of corrosion of the pipe or pipeline based on an empirical combination of the actual corrosion of the first probe part, the spread
resistance and the AC voltage measured.